HAMAMATSU

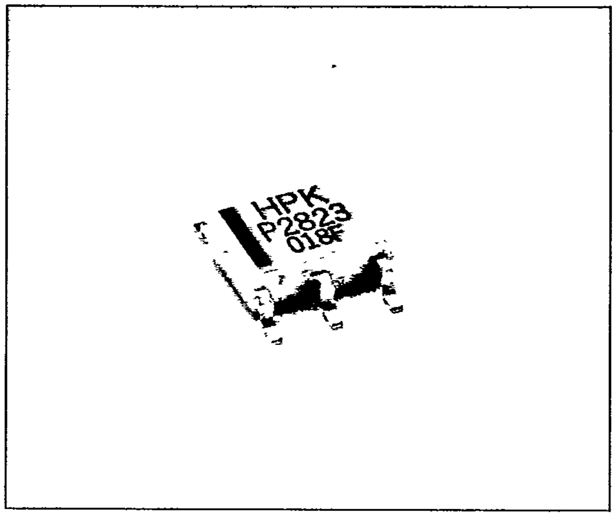
TECHNICAL DATA

MINI-FLAT PACKAGE PHOTOCOUPLERS P2823 SERIES

T-41-89

LED input, photo IC output (digital output), 6-pin mini-flat package offers surface mounting

The P2823 is a digital output photocoupler consisting of a high-speed infrared LED and a single chip photo IC (which comprises a photodiode, amplifier, schmidt trigger circuit, and output transistor). Package as a 6-pin mini-flat type, it offers surface mounting on a printed circuit board. The open collector output permits a wide selection of load resistances. Two types of I/O format are available, the P2823 with normally OFF and the P2823-01 with normally ON. Applications include signal interface for musical instruments, logic signal interface for computers, etc.



FEATURES

- 6-pin mini-flat package
- Open collector output
- TTL compatible
- High input-output isolation voltage : 3500 Vrms Min.
- Surface-mountable
- Taping available (option)
- UL listed (E75221)

APPLICATIONS

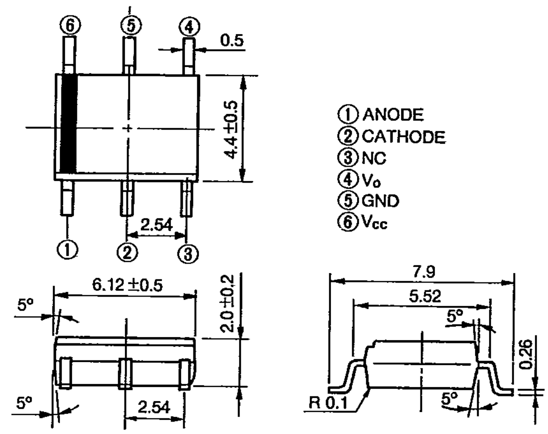
- Logic interface for electronic musical instruments
- Noise reduction for electronic devices
- Logic interface for computers

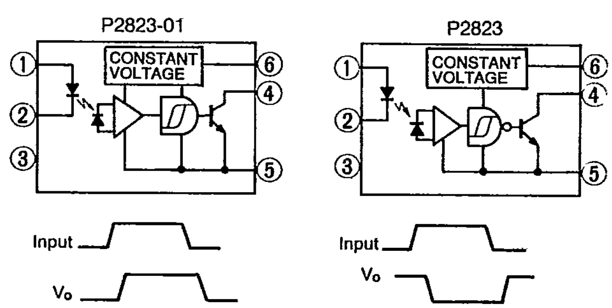
MAXIMUM RATINGS (Ta=25°C)

Parameters		Symbols	Ratings	Unit
Input	Forward Current	I_F	50	mA
	Reverse Voltage	V_R	5	V
	Power Dissipation	P	75	mW
Output	Power Supply Voltage	V_{CC}	16	V
	High Level Output Voltage	V_{OH}	16	V
	Low Level Output Current	I_{OL}	50	mA
	Power Dissipation	P_O	150	mW
Isolation Voltage (1)		V_{iso}	3500	Vrms
Operating Temperature		T_{opr}	−25 ~ +85	°C
Storage Temperature		T_{stg}	−40 ~ +125	°C
Soldering Temperature		260°C, within 10 seconds		

(1) RH40 ~ 60%, 1 minute

Figure 1: Dimensional Outline and Pin Connection (Unit:mm)





MINI-FLAT PACKAGE PHOTOCOUPLER P2823 SERIES

ELECTRICAL CHARACTERISTICS (Ta = 0 ~ 70°C)

	Parameters	Symbols	Conditions	P2823-01			P2823			Unit
				Min.	Typ.	Max.	Min.	Typ.	Max.	
Input	Forward Voltage	V_F	I_F = 4mA	–	1.1	1.4	–	1.1	1.4	V
Input	Reverse Current	I_R	Ta = 25°C, V_R = 3V	–	–	10	–	–	10	µA
Input	Terminal Capacitance	C_t	Ta = 25°C, V = 0, f = 1kHz	–	30	–	–	30	–	pF
Output	Operating Supply Voltage	V_{CC}		4.5	–	16	4.5	–	16	V
Output	Low Level Output Voltage	V_{OL}	V_{CC} = 5V, I_{OL} = 16mA, I_F = 0/5mA	–	–	0.4	–	–	0.4	V
Output	High Level Output Current	I_{OH}	V_{CC} = V_O = 15V, I_F = 5/0mA	–	–	100	–	–	100	µA
Output	Low Level Supply Current	I_{CCL}	V_{CC} = 5V, I_F = 0/5mA	–	5.2	12	–	6.3	15	mA
Output	High Level Supply Current	I_{CCH}	V_{CC} = 5V, I_F = 5/0mA	–	3.2	10	–	4.5	10	mA
Transfer Characteristics	L→H Threshold Input Current (1)	I_{FLH}	Ta = 25°C, V_{CC} = 5V, R_L = 280Ω	–	1.0	5.0	–	1.0	–	mA
Transfer Characteristics	H→L Threshold Input Current (1)	I_{FHL}	Ta = 25°C, V_{CC} = 5V, R_L = 280Ω	–	0.9	–	–	1.2	5.0	mA
Transfer Characteristics	Hysteresis		V_{CC} = 5V, R_L = 280Ω I_{FHL}/I_{FLH}, I_{FLH}/I_{FHL}	–	0.9	–	–	0.9	–	–
Transfer Characteristics	Isolation Resistance	R_{iso}	Ta = 25°C, DC500V, RH40 ~ 60%	5×10^{10}	–	–	5×10^{10}	–	–	Ω
Transfer Characteristics	L→H Propagation Delay Time (2)	t_{PLH}	Ta = 25°C, V_{CC} = 5V	–	1.4	–	–	6.3	15	µs
Transfer Characteristics	H→L Propagation Delay Time (2)	t_{PHL}	I_F = 5mA	–	6.5	10	–	1.7	10	µs
Transfer Characteristics	Rise Time (2)	t_r	R_L = 280Ω	–	0.15	15	–	0.03	–	µs
Transfer Characteristics	Fall Time (2)	t_f		–	0.03	–	–	0.15	–	µs

(1) Connect a capacitor of more than 0.1 µF between Vcc and GND.

(2) Response Time Measuring Circuit

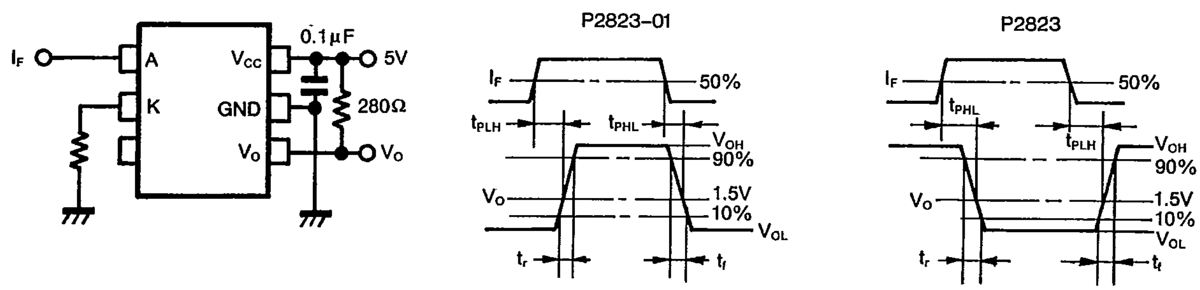


Figure 2: LED Allowable Forward Current vs. Temperature

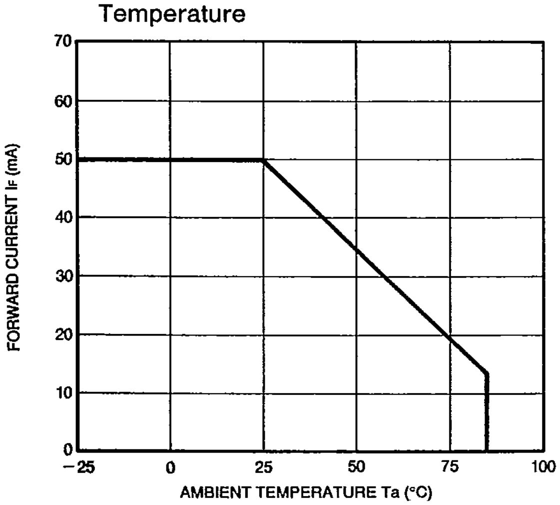


Figure 3: Photo IC Allowable Power Dissipation vs. Temperature

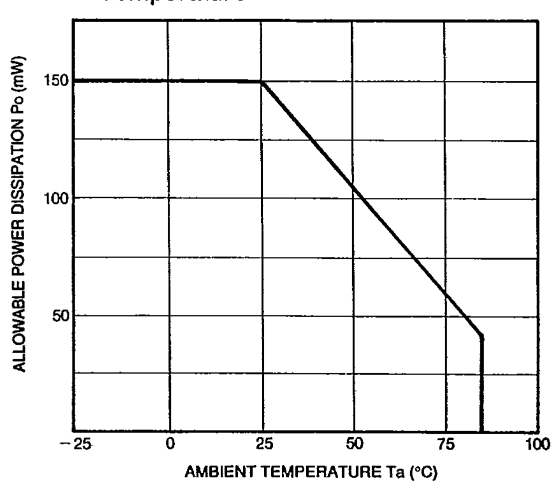


Figure 4: Forward Current vs. Forward Voltage

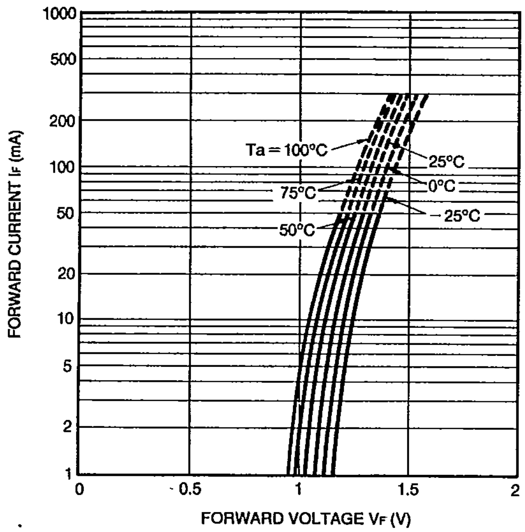


Figure 5: Supply Current vs. Temperature

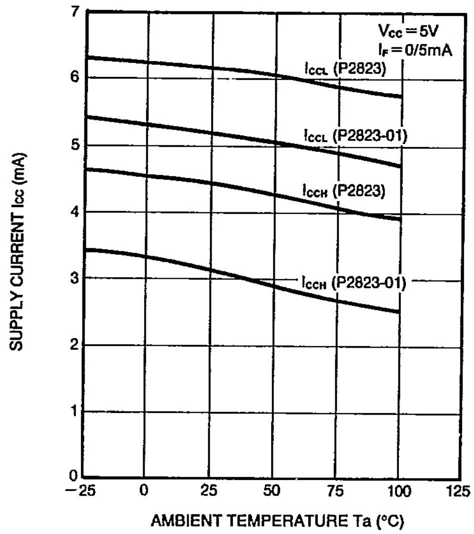


Figure 6: Low Level Output Voltage vs. Output Current

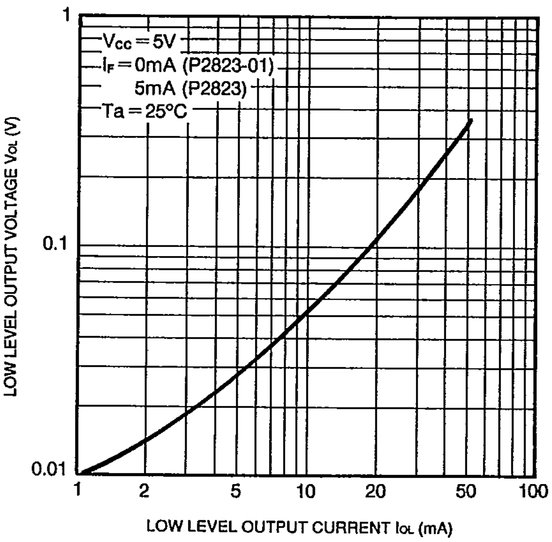


Figure 7: Low Level Output Voltage vs. Temperature

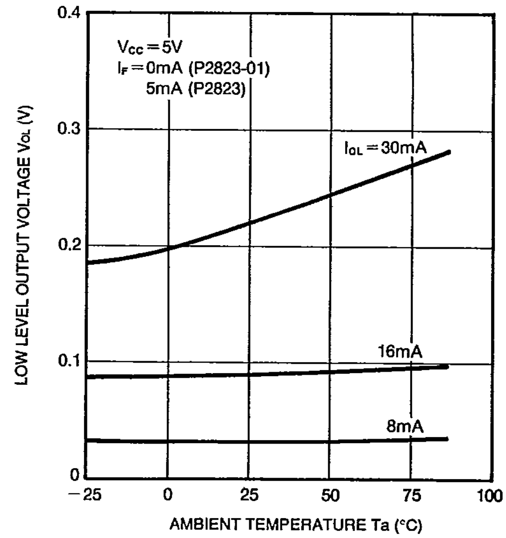


Figure 8: Threshold Input Current vs. Temperature

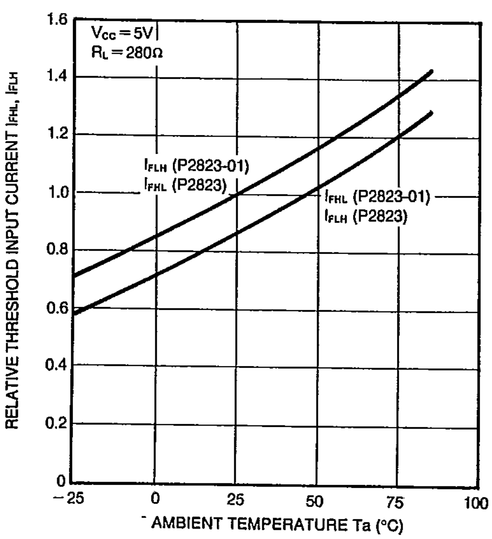
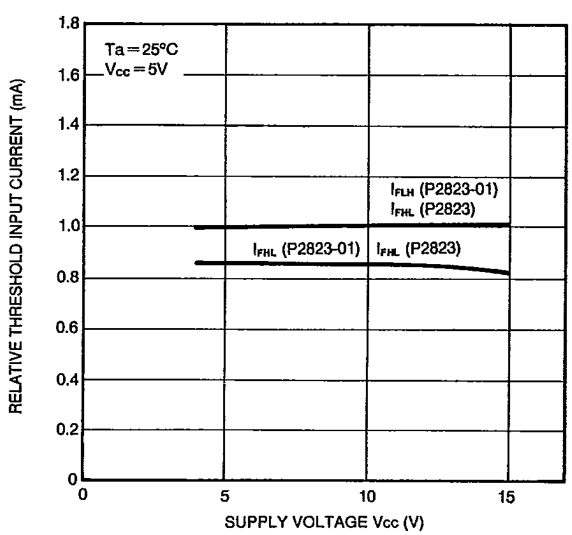


Figure 9: Threshold Input Current vs. Supply Voltage



MINI-FLAT PACKAGE PHOTOCOUPLER P2823 SERIES

Figure 10: Propagation Delay Time vs. Forward Current

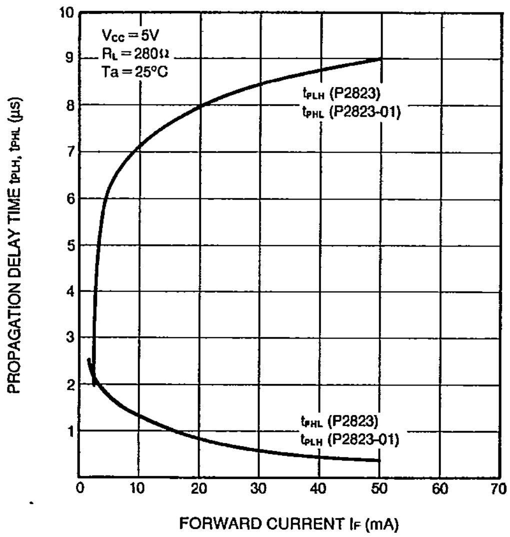


Figure 11: Rise/Fall Time vs. Load Resistance

